CLAIMS

1. A method for determining the complex impedance $Z(f_m)$ of a non-stationary electrochemical system, characterized in that it comprises the steps of:

setting the system to a selected voltage state and applying a sinusoidal signal of frequency f_m thereto,

measuring, immediately after, successive values of the voltage and of the current at regular time intervals ΔT,

calculating the discrete Fourier transforms of the voltage $(E(f))$ and of the current $(I(f))$, the voltage transform being calculated for the sole frequency f_m of the sinusoidal signal and the current transform being calculated for frequency f_m and for two adjacent frequencies f_{m-1} and f_{m+1} on either side of frequency f_m, and

calculating the impedance according to the following formula:

$$Z(f_m)=E(f_m)/I^*(f_m)$$

where I^* designates a corrected current such that:

$$Re[I^*(f_m)] = Re[I(f_m)] - \{Re[I(f_{m+1})]+Re[I(f_{m-1})]\}/2$$

$$Im[I^*(f_m)] = Im[I(f_m)] - \{Im[I(f_{m+1})]+Im[I(f_{m-1})]\}/2.$$

2. The method of claim 1, characterized in that it is repeated for a succession of excitation frequencies.